Zonet®

ZEW3002

802.11g Wireless Access Point

USER MANUAL

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Chapter 1 Introduction

1.1 Welcome

ZEW3002 is fully compliant with IEEE802.11g/b standards. It can help you extend from the wired network to the wireless network, free from the cabling troubles. It is the best choice for SOHO and small enterprise users. ZEW3002 provides five work modes: AP, WDS P2P Bridge, WDS P2MP Bridge, WDS AP Bridge and Client. It also supports 64/128-bit WEP, WPA, WPA2. The MAC address filter can protect your network against any malicious intrusion. Moreover, the Web management utility can benefit you to manage the device easily.

1.2 Features

- Supports IEEE 802.11g, IEEE 802.11b standards
- Supports five connection modes: AP, WDS P2P Bridge, WDS P2MP Bridge, WDS AP Repeater and Client
- Supports one 10/100M Auto-Negotiation Ethernet port
- Supports 100 meters indoors and 300 meters outdoors (depends on the environments around)
- Supports Web management utility and easy Setup Wizard
- Supports 64/128-bit WEP, WPA & WPA2 encryptions and security mechanism
- Supports IEEE802.11b/IEEE802.11g Auto-negotiation and manual configuration modes
- Supports Auto MDI/MDIX
- Supports Netscape 6.1, IE5.5 or later
- Supports authorization access over thirty-two MAC addresses
- Supports auto wireless channel selection
- Provides detachable antenna

1.3 Package Contents

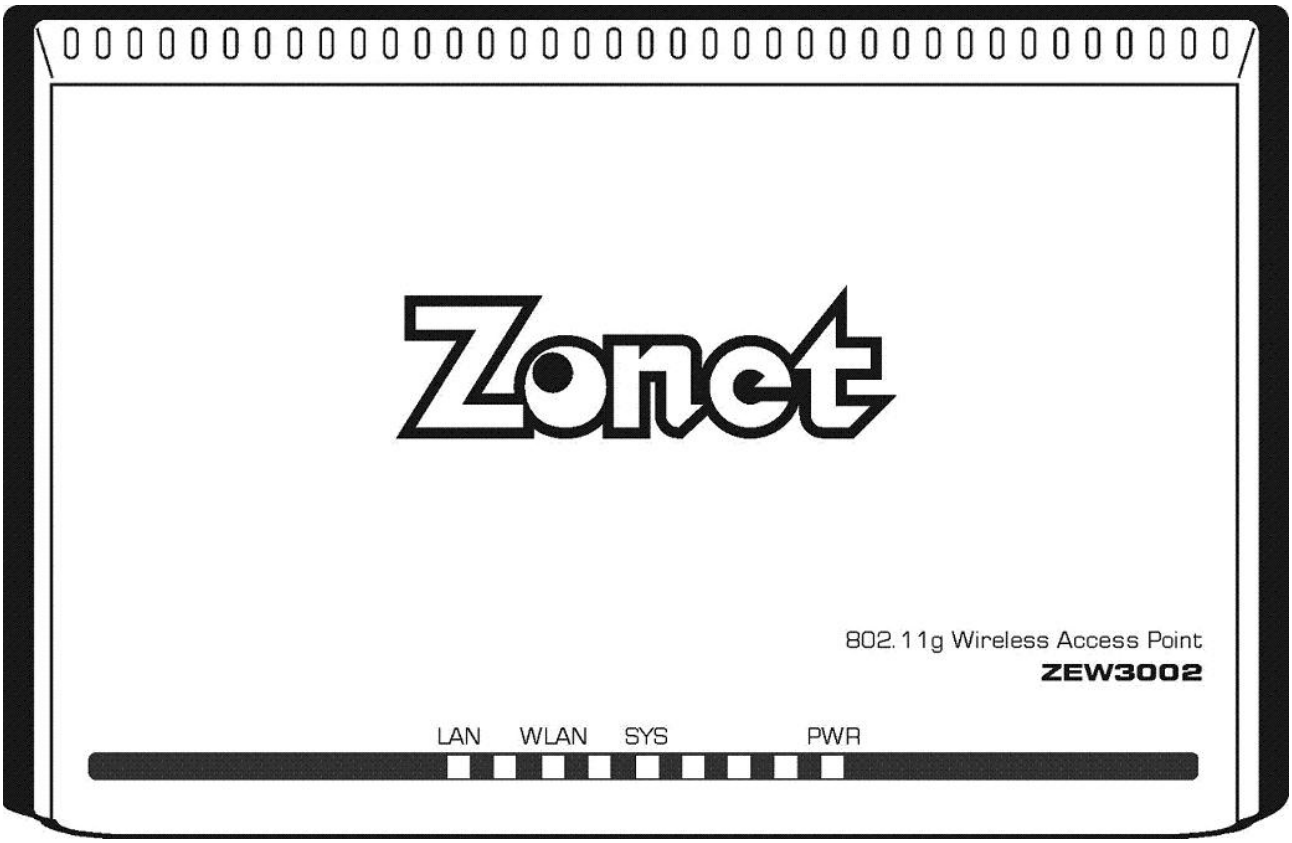
- One ZEW3002
- One Detachable Antenna
- One External AC Power Adapter
- One Quick Installation Guide
- One CD

Chapter 2 Hardware Installation

2.1 Panel Layout

2.1.1 The Top Panel

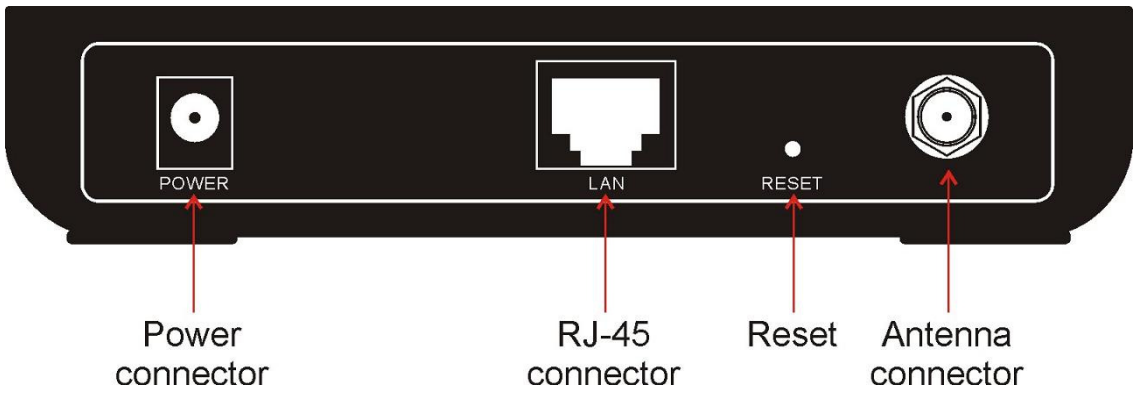
The top panel of ZEW3002 consists of several LED indicators.



Name	Action	Description
Power	OFF	No Power
	ON	Power on
SYS	ON	ZEW3002 is initializing
	Flashing	ZEW3002 is working properly
	OFF	ZEW3002 has a hardware error
WLAN	ON	There is a device linked to the corresponding port but no activity
	OFF	There is no device linked to the corresponding port
LAN	ON	There is a device linked to the corresponding port but no activity
	Flashing	There is an active device linked to the corresponding port
	OFF	There is no device linked to the corresponding port

2.1.2 The Rear Panel

The rear panel contains the following features. (Viewed from left to right)



1. Power Jack only use the power adapter applied with ZEW3002 to prevent damage
2. One LAN 10/100Mbps RJ45 port for connecting to the router/modem, local PC or switch/hub.
3. Factory Default Reset button
4. One external dipole antenna

There is a way to reset the ZEW3002's factory defaults by using the Factory Default Reset button:

1. Turn on ZEW3002's power
2. Press and hold the default reset button, until the system LED lights up (about 5 seconds)
3. Release the reset button and wait for ZEW3002 to reboot.

Note: Ensure ZEW3002 is powered on before it restarts completely.

2.2 System Requirements

- Broadband Internet Access Service (DSL/Cable/Ethernet)
- PC on the LAN needs a working Ethernet Adapter and an Ethernet cable with RJ45 connector
- TCP/IP protocol must be installed on each PC
- Web browser, such as Microsoft Internet Explorer 5.5 or later, Netscape Navigator 6.1 or later

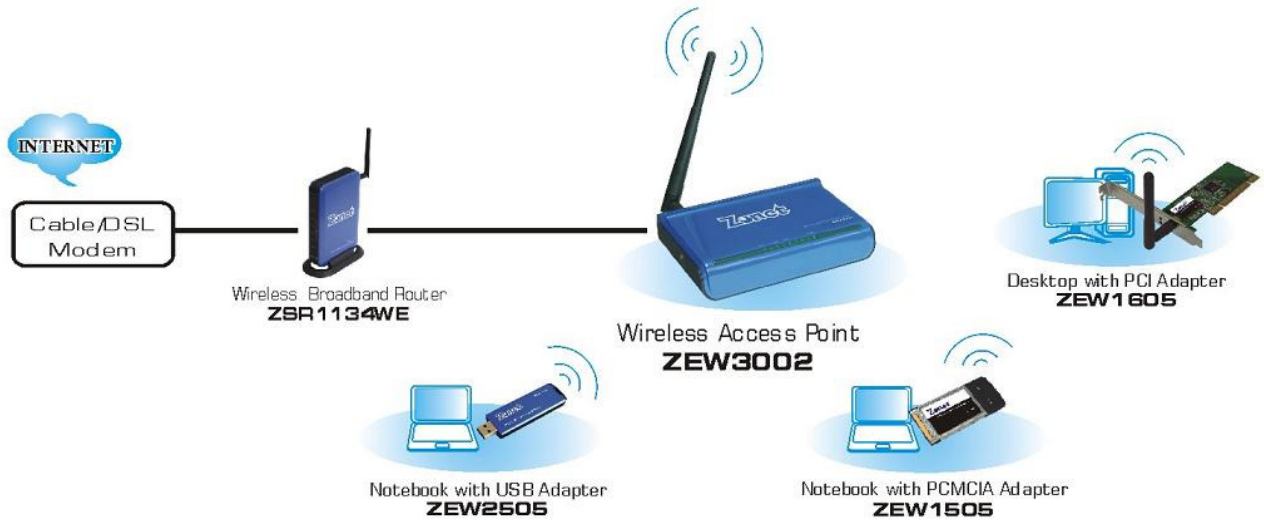
2.3 Installation Environment Requirements

- Do not in direct sunlight or near a heater or heating vent
- Do not in cluttered or crowded place. There should be at least 2 inches (5 cm) of clear space on all sides of ZEW3002
- Well ventilated (especially if it is in a closet)
- Operating temperature: 0°C~40°C
- Operating Humidity: 10%~95%RH, Non-condensing

2.4 Hardware Connection

Note: Before connecting ZEW3002, be sure to power off your computer, DSL/Cable modem, and ZEW3002. To achieve maximum wireless coverage, tilt the AP's antenna outward at 45° angle.

1. Connect one end of the cable to your broadband router, DSL/Cable modem, PC or Switch/Hub port and connect the other end to the LAN port of ZEW3002.
2. Power on ZEW3002 by connecting one end of the supplied power adapter to the power jack of ZEW3002 and connecting the other end to an electrical outlet.
3. Power on your computer.
4. Make sure the LEDs of ZEW3002 are lit. If not, try the above steps again.

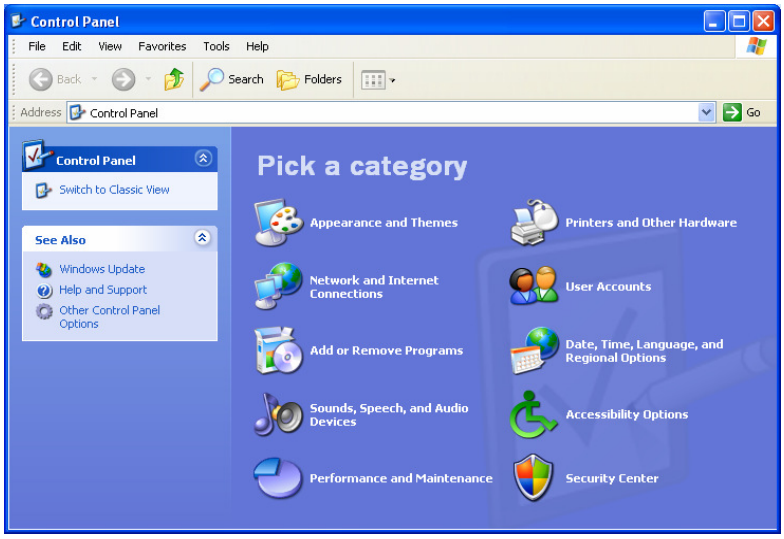


Chapter 3 Configure your computer

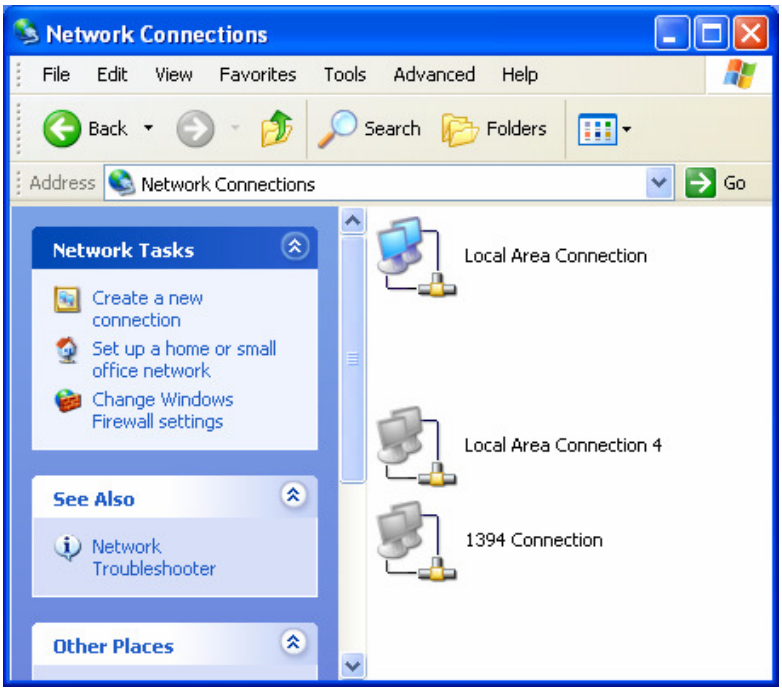
3.1 TCP/IP Address Setting

Default IP Address: 192.168.0.254
Default Subnet Mask: 255.255.255.0

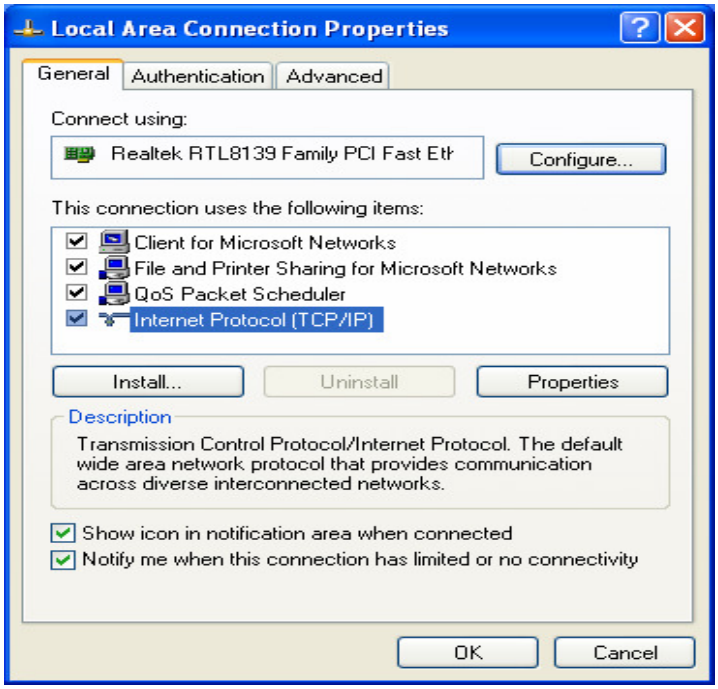
1. Click ***Start*** → ***Settings*** → ***Control Panel***



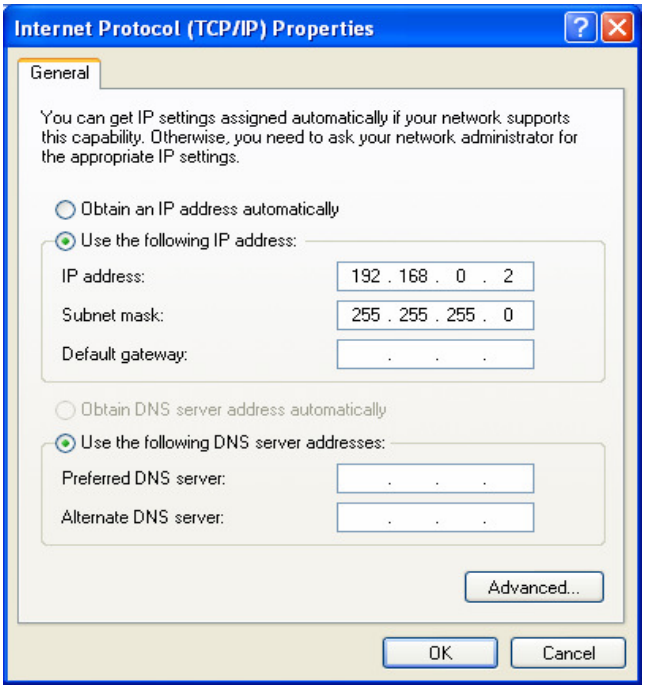
2. Click ***Network and Internet Connections*** → ***Network Connections***



3. Choose ***Local Area Connection***, right-click on the icon, choose ***Properties*** → ***Local Area Connection Properties*** → ***Internet Protocol (TCP/IP)*** and then click ***Properties***.



4. Choose ***Use the following IP address***, enter the IP address as: 192.168.0.xxx. ("xxx" is from 1 to 253), Subnet mask is: 255.255.255.0



5. Click ***OK*** to apply and return to ***Local Area Connection Properties*** page and then click ***OK*** to exit the setting window.

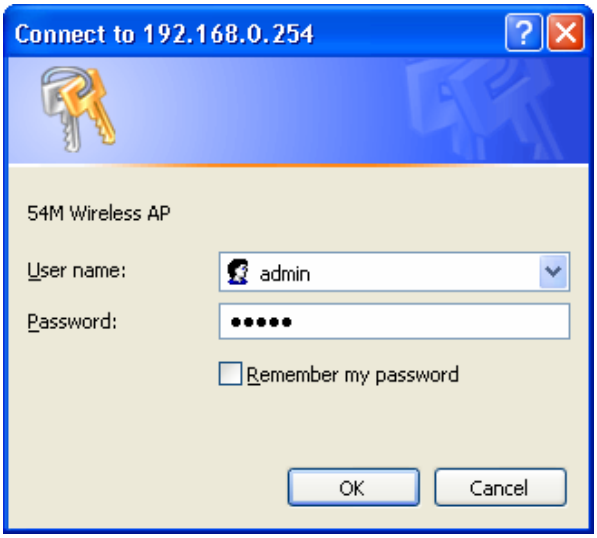
Chapter 4 Configure your ZEW3002

4.1 Log in

ZEW3002 provides Web based configuration scheme, which is, configuring by Netscape Communicator or Internet Explorer. Take example for Microsoft Internet Explorer.

1. Open an Internet Explorer (or other web browser), type **192.168.0.254** in the address bar, and then press ***Enter***.

2. Input user name and password and then press ***OK***.
   Default User Name: Admin
   Default Password: Admin



3. After login successfully, welcome screen will be displayed.

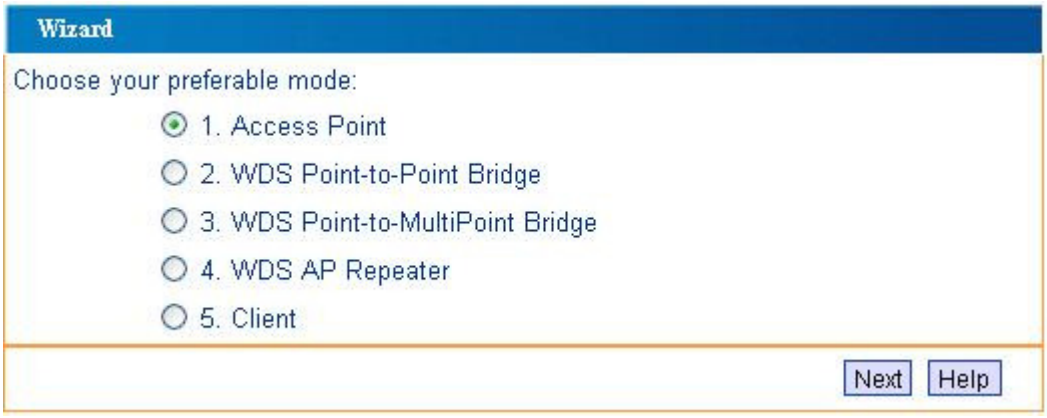
4.2 Wizard

Click ***Next*** from the welcome screen to enter setup Wizard. There are five different operating modes including —AP, WDS P2P Bridge, WDS P2MP Bridge, WDS AP Repeater and Client. For different requirements, you can select one of the suitable operating modes.

Note : If the Wizard page hasn't appears, click the wizard tab on the left to active.

Note: The settings below are based on AP mode. For other modes, same procedure but different screen.

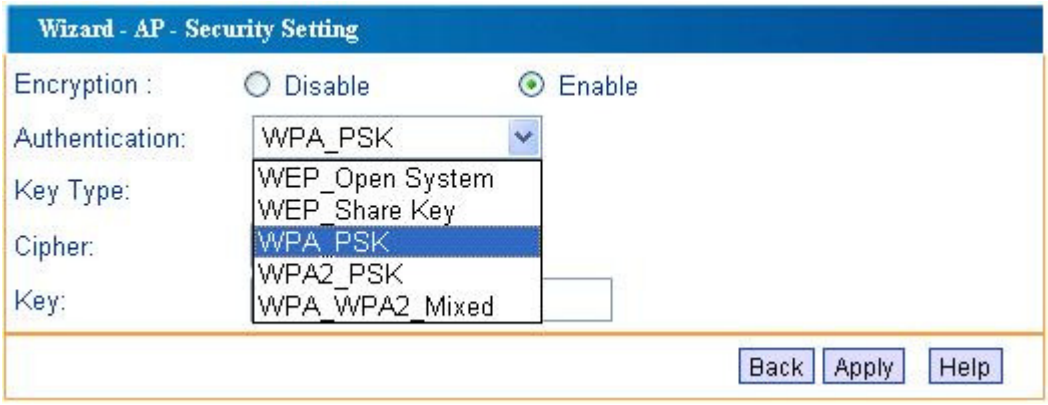
1. Select AP mode and click ***Next***.



2. Click ***Next*** to continue or ***Back*** button to return to the previous screen.

- **SSID:** The name of your wireless network. The same name (SSID) must be assigned to all wireless devices in your network. The default SSID is 802.11g Wireless AP, but it is recommended strongly that you change your networks name (SSID) to a different value. This value is case-sensitive.
- **Channel:** From 1 to 13, this field determines which operating frequency will be used. It is not necessary to change the wireless channel unless you notice interference problems with another nearby access point.

3. Click ***Apply*** to save your settings.



- **Authentication:** WEP_Open System, WEP_Share Key, WPA_PSK, WPA2_PSK, and WPA_WPA2_Mixed
- **Key Type:** ASCII or Hex format.
- **Key Size:** 64-bit or 128-bit

  Note: If you select 64-bit, please enter 10 Hexadecimal characters or 5 ASCII Characters for the key content. For 128-bit, please enter 26 Hexadecimal characters or 13 ASCII Characters
- **Key:** when using the WEP encryption, you could save up to 4 keys.

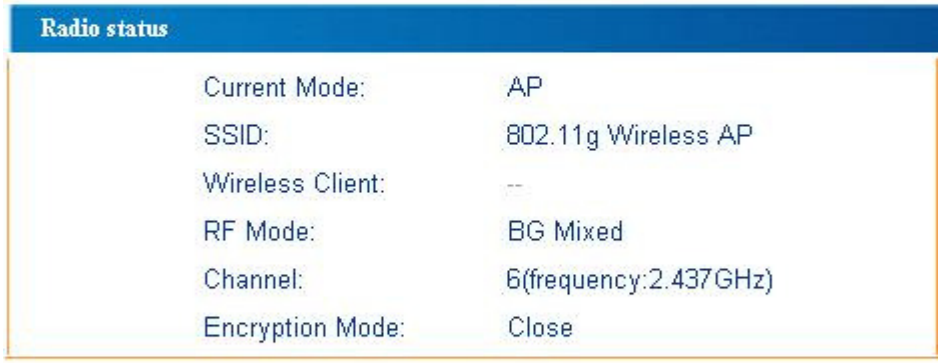
Wireless encryption settings support are shown below.

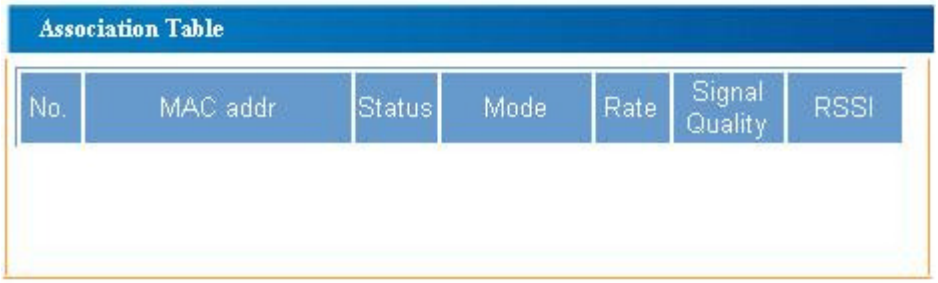
Encry. \ Mode	AP	Repeater	P2P	P2MP	Client
WEP	Yes	Yes	Yes	Yes	Yes
WPA	Yes	NO	NO	NO	Yes
WPA2	Yes	NO	NO	NO	Yes
WPA_WPA2_Mix	Yes	NO	NO	NO	Yes

*Note: After clicking **Apply** to save your settings, you have to reboot the device (From System Tools → Reboot) to let your settings take effect.*

4.3 System Status

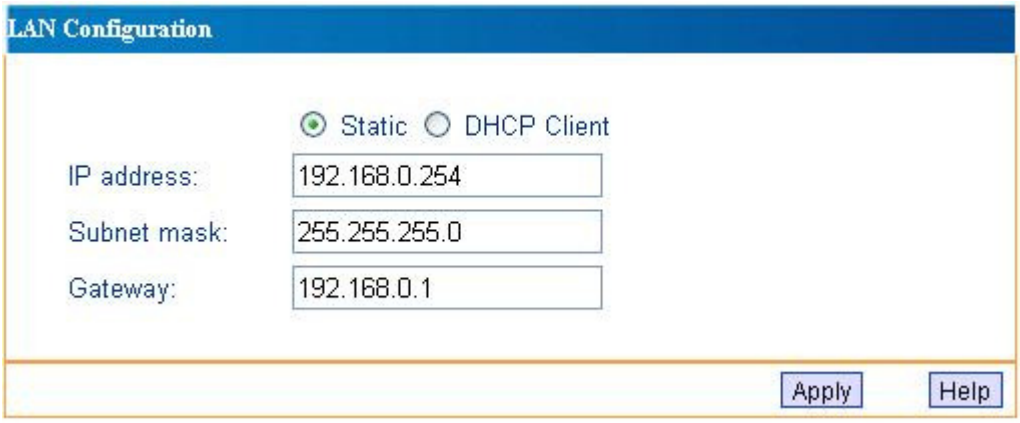
Click ***Refresh*** button to update the linking info.





- **Product information:** Display current firmware version, MAC Address, LAN IP Address, subnet mask, Gateway etc.
- **Radio Status:** Current mode, SSID, RF mode, Channel and Encryption mode etc.
- **Association Table:** Display the clients' information of connecting with ZEW3002 including the MAC address, status, mode, rate, signal quality and RSSI.

4.4 LAN Setting



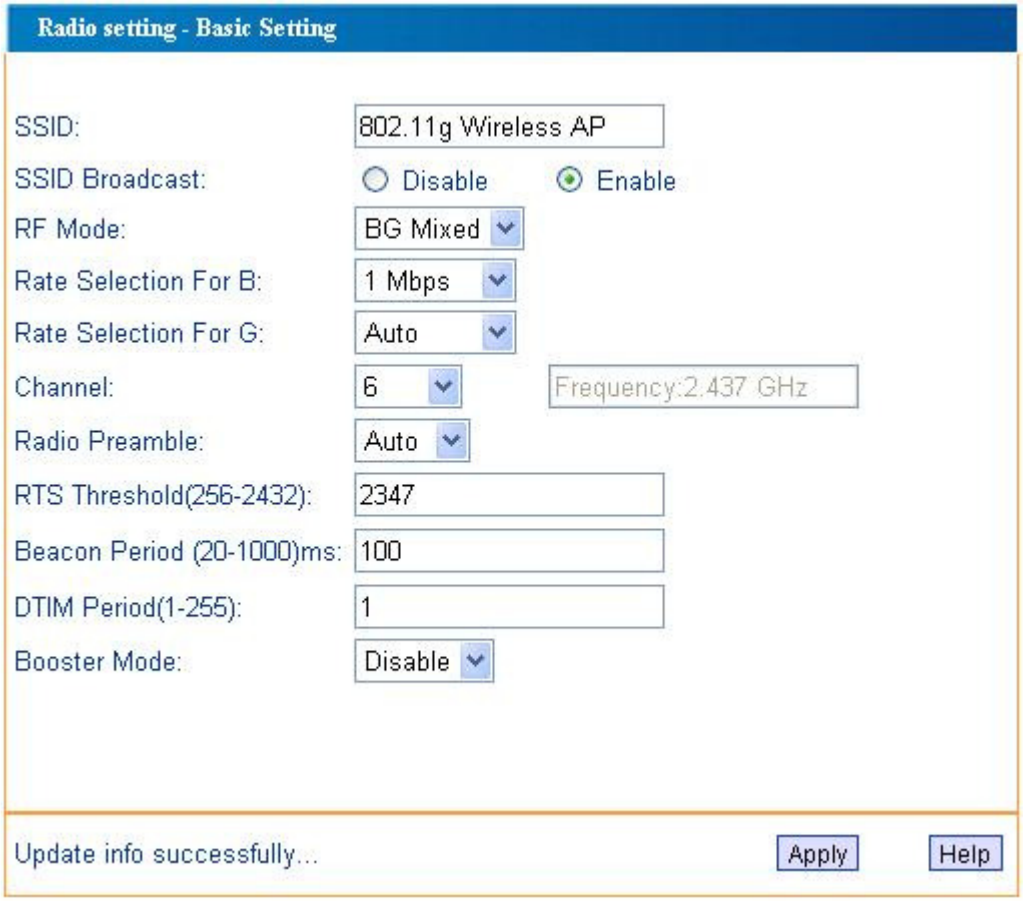
- **Static:** to assign a static or fixed IP address to ZEW3002, select this option and enter the specified IP address, Subnet mask, and Gateway
- **DHCP Client:** if the router will automatically assign an IP address to ZEW3002, then select this option.

Note: If the IP address changed, the login IP address to the Web-based management interface will change correspondingly.

Chapter 5 Radio Configuration

5.1 Basic Setting

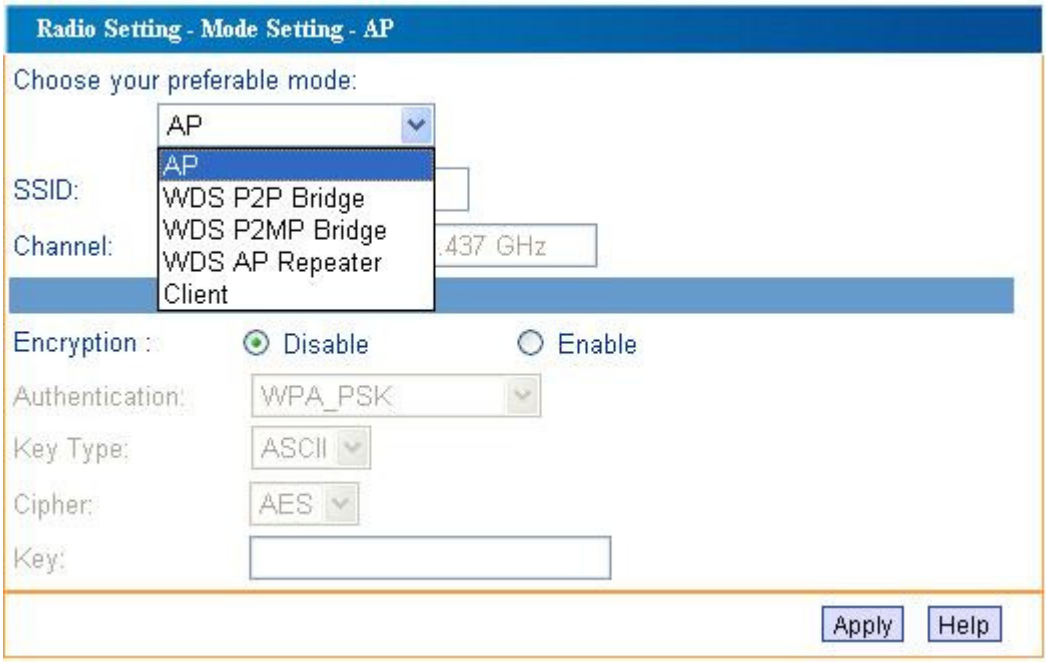
Click ***Apply*** to save your settings, or click ***Help*** for more information.



- **SSID:** the name of your wireless network.
- **SSID Broadcast:** Enable/disable the SSID broadcast
- **RF Mode:** Selects 802.11g, 802.11b, BG Mixed
- **Channel:** Select the operating channel for your wireless network.
- **Radio Preamble:** Selects short, long, or Auto.
- **RTS Threshold:** This value should remain its default setting of 2347(Bytes).
- **Beacon Period:** This value indicates the frequency interval of the beacon (in milliseconds)
- **DTIM Period:** This value indicates how often the AP sends out a DTIM.
- **Booster mode:** When used with Marvell client cards, Boost Mode enhances throughput an additional 30% at 54Mbps.

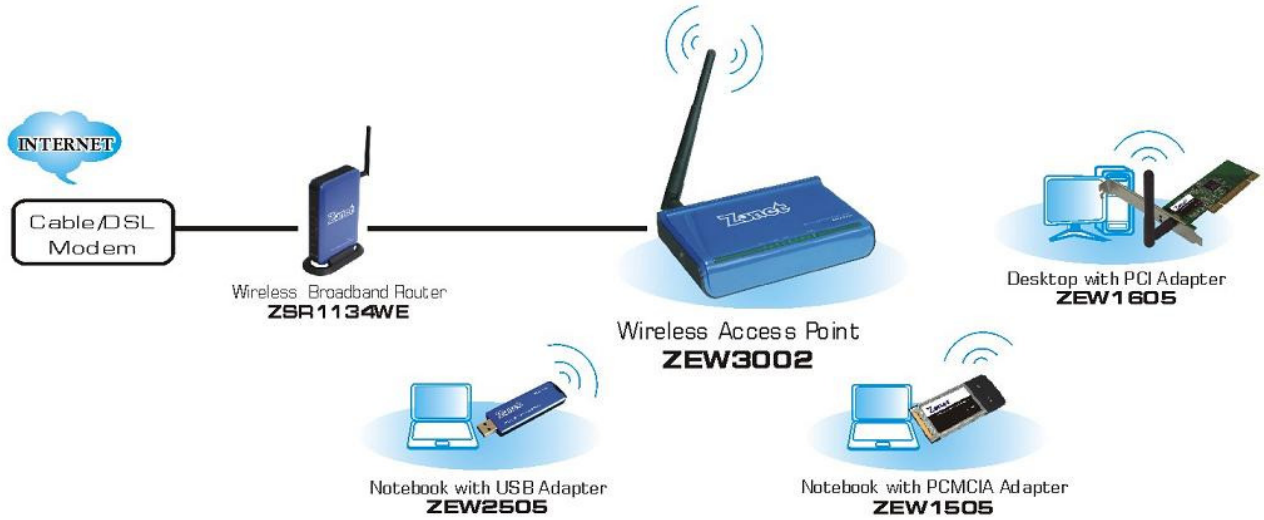
5.2 Mode Setting

The default operating mode is AP mode.

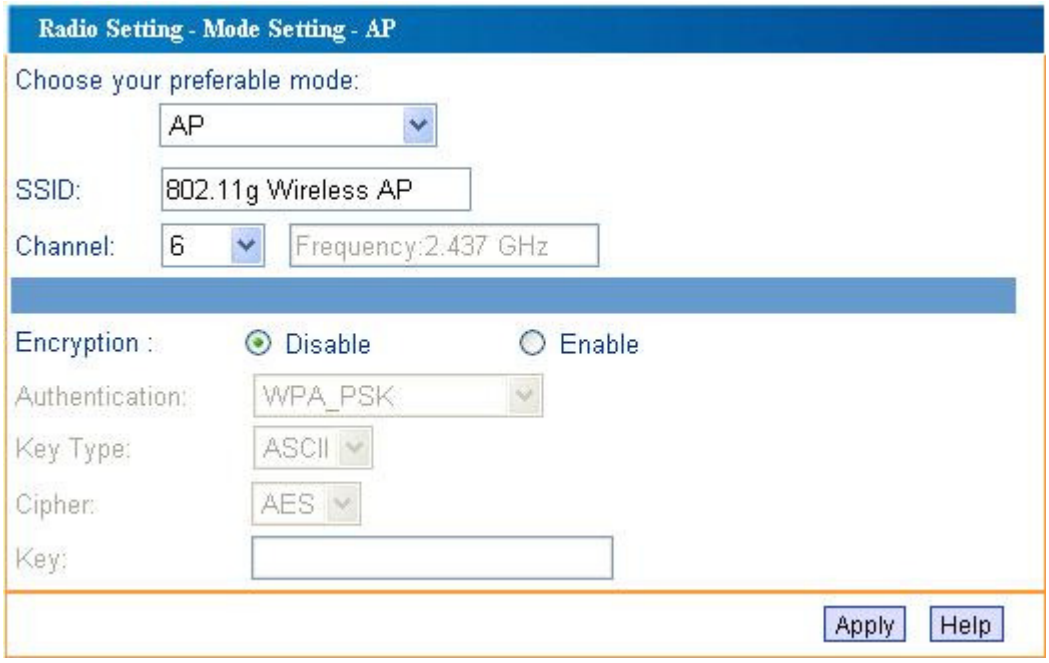


5.2.1 AP mode

In this mode, ZEW3002 will act as a central hub for different wireless LAN clients. For example, when traveling to a hotel that has high-speed internet access, you can connect to the internet through ZEW3002 which is connected to an Ethernet cable in the room.



Click ***Apply*** to save your settings.



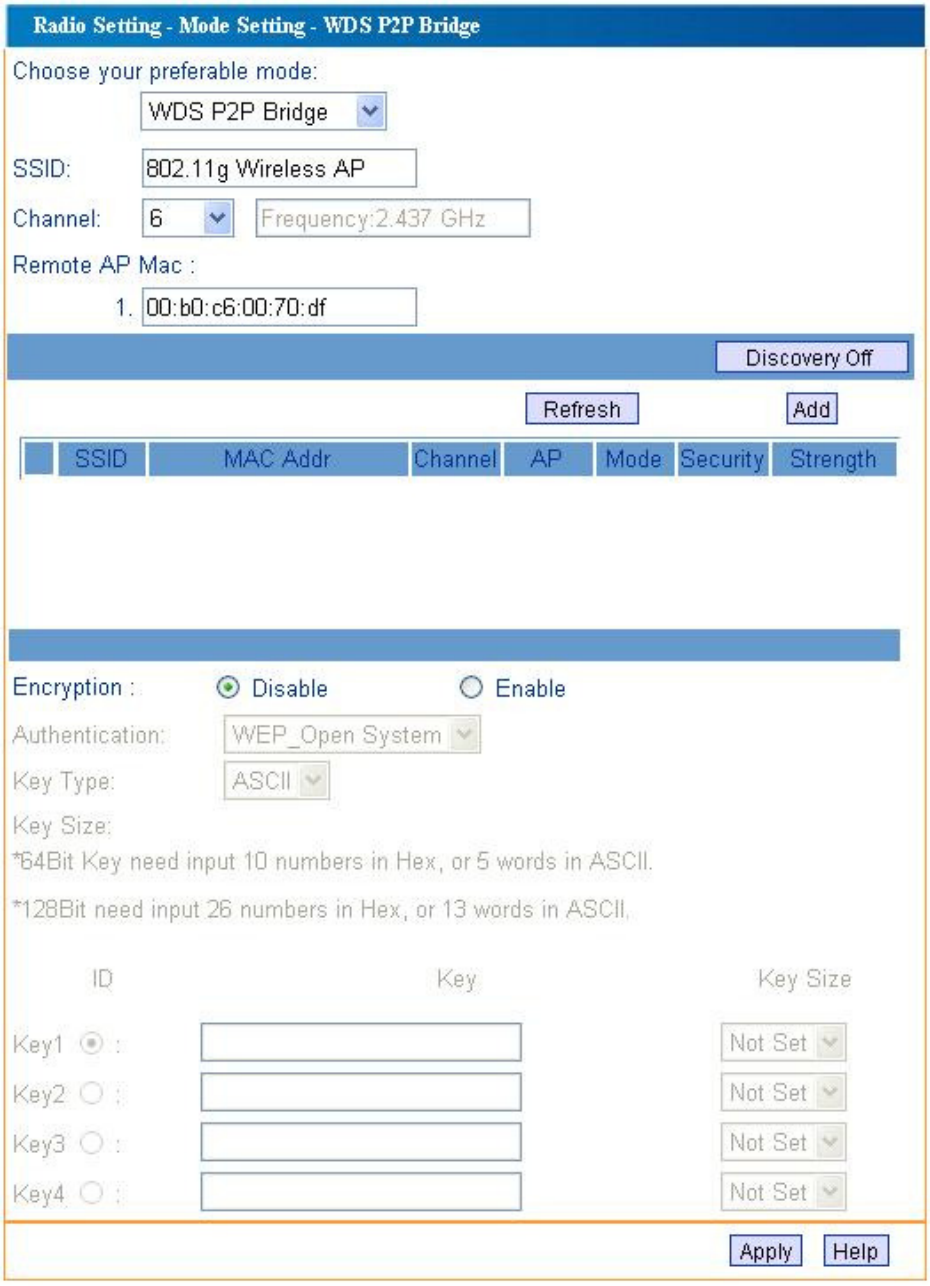
- **SSID:** The name of your wireless network.
- **Channel:** The operating channel
- **Encryption:** Select disable or WEP, WPA, WPA2, WPA_WPA2 Mixed mode for security.

5.2.2 WDS P2P Bridge

In this mode, two ZEW3002 in two remote locations connect with each other to provide a wireless bridge between 2 remote LANs. The two ZEW3002 operating in P2P mode do not allow client associations. It is mostly used by enterprise to connect 2 remote office's network together.

Note: WDS P2P Bridge mode only can be enabled on two or more ZEW3002 networking environment.

Click ***Apply*** to save your settings.

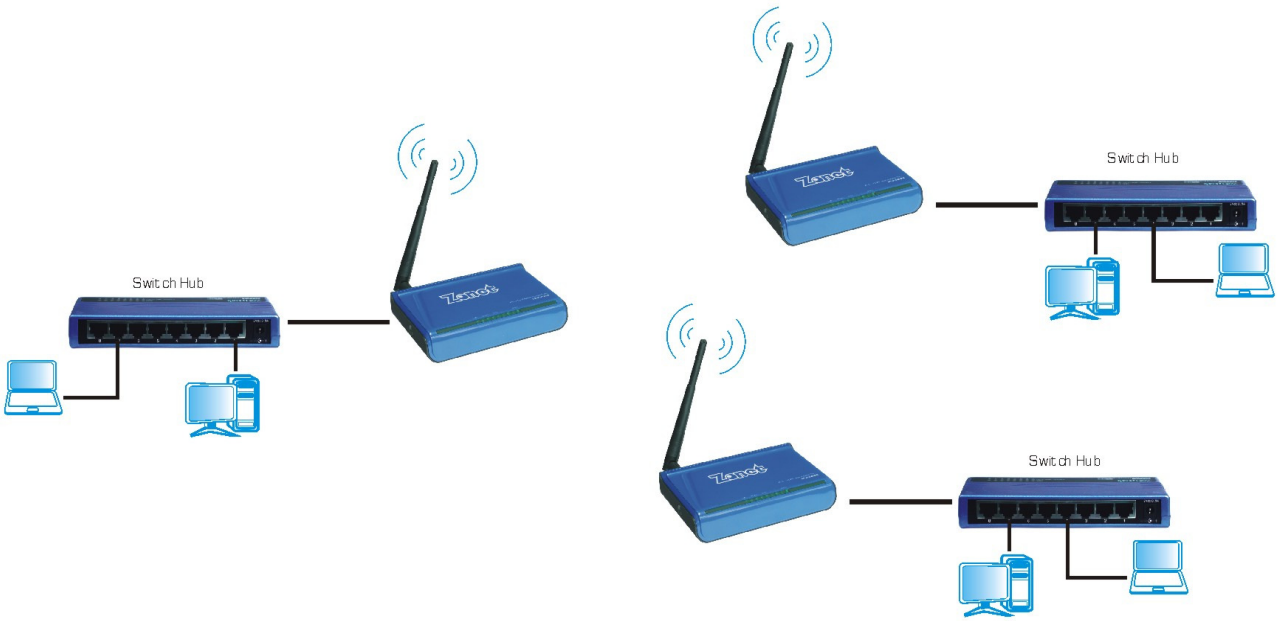


- **SSID:** The name of your wireless network.
- **Channel:** The operating channel
- **WDS remote AP MAC List:** Enter MAC addresses whose remote device needs to connect. (Also you can obtain MAC address for copying or entering manually by the scan.)
- **Encryption:** support only WEP mode for security.

5.2.3 WDS P2MP Bridge

A ZEW3002 operating in Point-to-Multipoint (P2MP) bridge mode wirelessly connects two or more wired networks. The root ZEW3002 (LAN1) operates in P2MP mode, while other ZEW3002 (LAN2, LAN3) must operate in P2P mode.
When operating in P2MP bridge mode, ZEW3002 does not allow client associations.

Note: WDS P2MP Bridge mode only can be enabled on two or more ZEW3002 networking environment.



Click ***Apply*** to save your settings.

- **SSID:** The name of your wireless network.
- **Channel:** The operating channel
- **WDS remote AP List:** MAC addresses of the P2P Bridge that are connected to this P2MP Bridge. Up to six MAC addresses can be entered. (Also you can obtain MAC address for copying or entering manually by the scan.)
- **Encryption**: support only WEP mode for security.

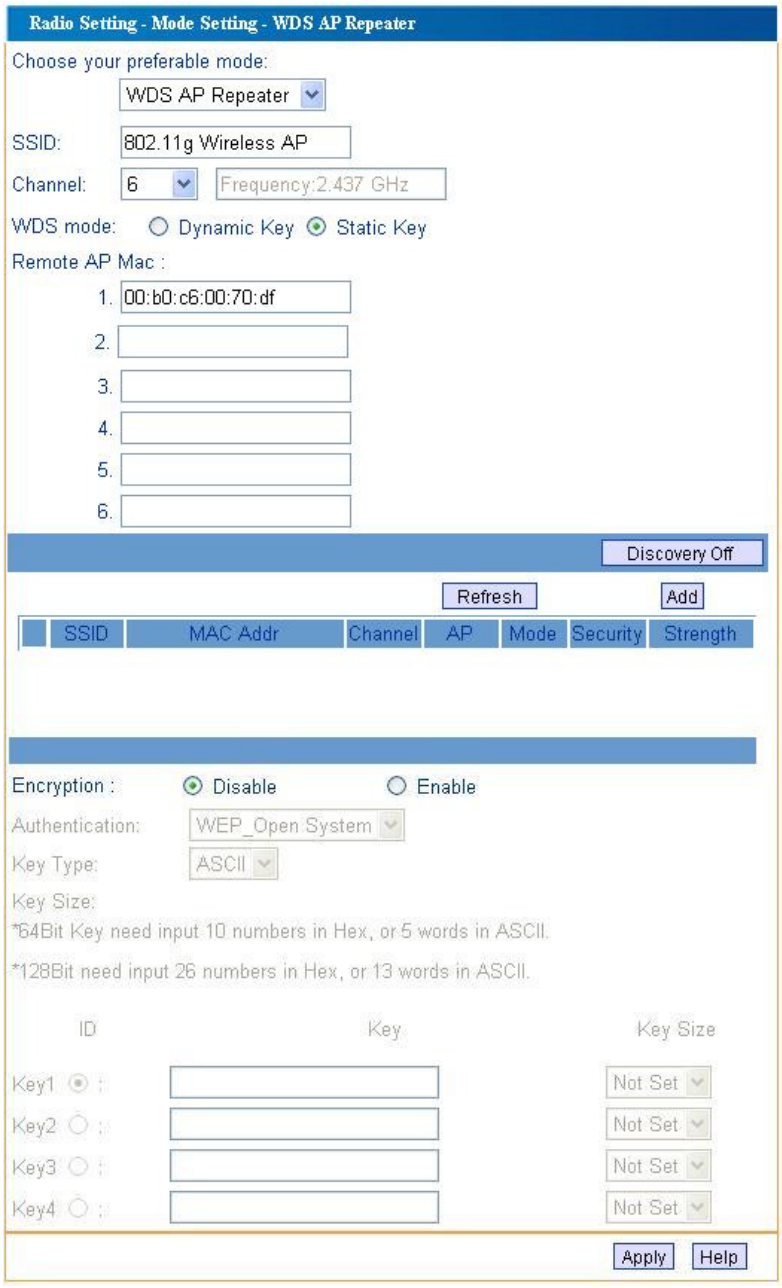
5.2.4 WDS AP Repeater

A repeater is placed between an AP and a client to extend the distance between the two WLAN devices. Functioning as a WDS repeater, ZEW3002 connects to both a client card as an AP and to another AP. In typical repeater applications, APs connecting to other APs equipped with WDS functionality must also support WDS.

Figure below shows an example of a Repeater network with two ZEW3002 Repeaters connected to a ZEW3002 (AP mode), with each Repeater allowing wireless clients to associate.

Note: WDS AP Repeater mode only can be enabled on two or more ZEW3002 networking environment.

Click ***Apply*** to save your settings.



- **SSID:** The name of your wireless network.
- **Channel:** The operating channel
- **WDS mode:** Dynamic key or Static key; At least one of the two associated repeater should be set as static key. If selecting dynamic key for one repeater, you don't have to fill the other repeater's MAC addresses at the MAC list field.
- **WDS remote AP MAC List:** MAC addresses of the repeaters that are connected to this repeater. Up to six MAC Addresses can be entered.

  *Note: MAC addresses also can be searched by clicking **Scan** button and click **Add** button to select the item to the list.*
- **Encryption:** support only WEP mode for security.

5.2.5 Client mode

When Client mode is selected, ZEW3002 associates with another AP within its range. The device behaves like a wireless network adapter.
Figure below shows the Client mode ZEW3002 as a wireless client in infrastructure mode. Connect the LAN port of the ZEW3002 with Ethernet interface of the wired network.

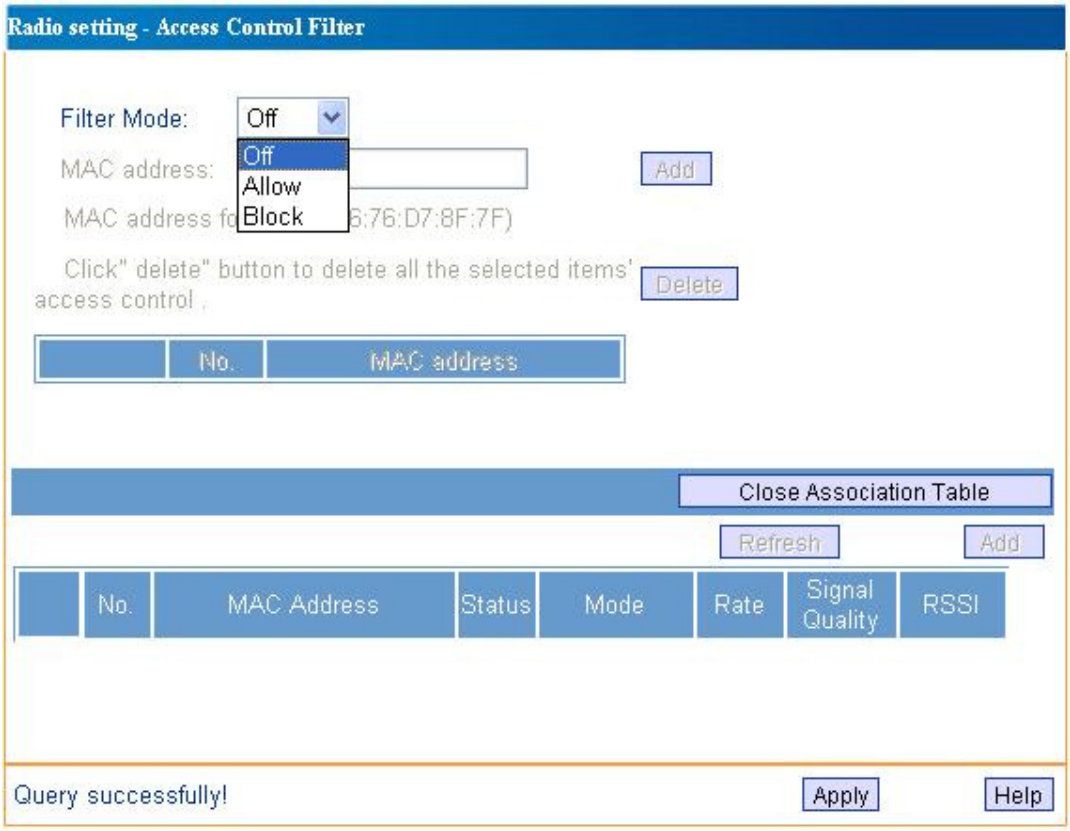
Click ***Apply*** to save your settings.

- **SSID:** The wireless network's name you want to associate with.
- **Channel:** The operating channel of the wireless network.
- **MAC Addr:** The MAC address of the wireless network.
- **Scan button:** you can through the scan function to display exit wireless network of the neighborhood, and click ***Add*** to establish connection with it.
- **Encryption:** Select disable, WEP, WPA, WPA2, WPA_WPA2 Mixed mode for security.

5.3 Access Filter

The Access filter page allows you to configure ZEW3002 to allow or block association with itself based on the MAC address of clients. Up to 32 MAC addresses can be added to the list.

Click ***Apply*** to save your settings.

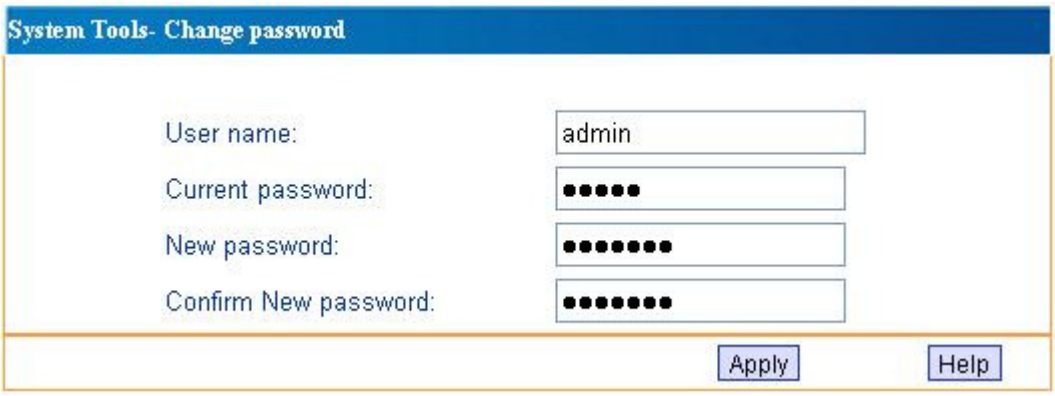


- **Filter mode:** Select *Off* to disable the filter function. Or select *Allow, Block* to allow / block client with the MAC address listed.
- **MAC address:** The PCs MAC addresses to filter. Click ***Add*** to take it in. Or ***Delete*** to remove it from the list.
- **Open/Close Association Table:** To view the current association information with the device**.** Click ***Refresh*** to update the association info, and click ***Add*** to take the selected item into filter list.

Chapter 6 System Tools

6.1 Change Password

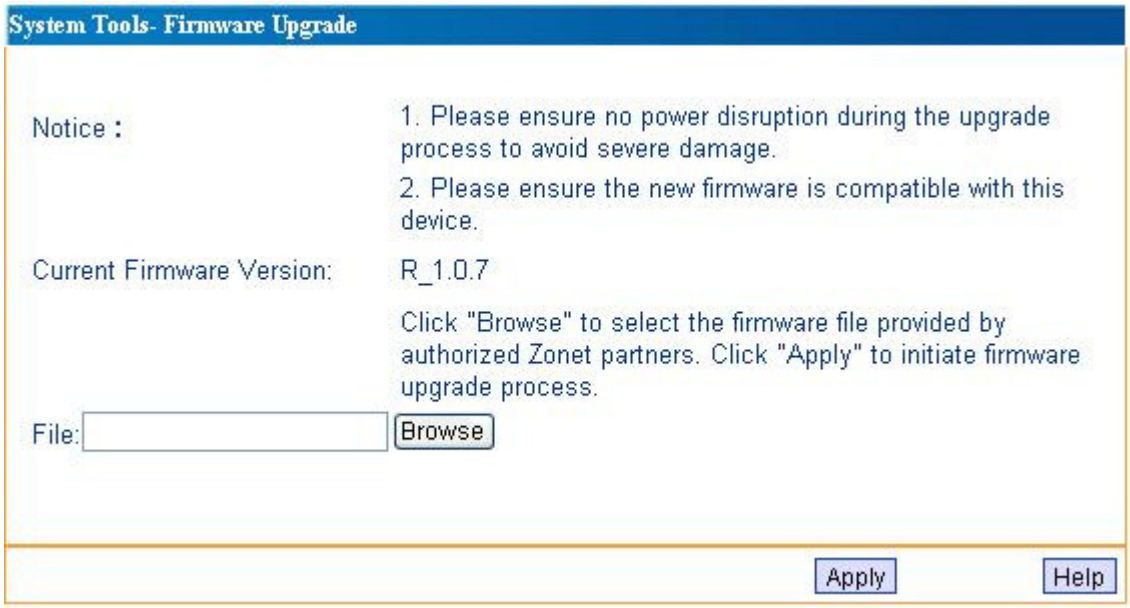
Users can setup the User Name and Password for the next login on this page.



Note: For security reason, it is strongly recommend that you change the default user name and password.

6.2 Firmware Upgrade

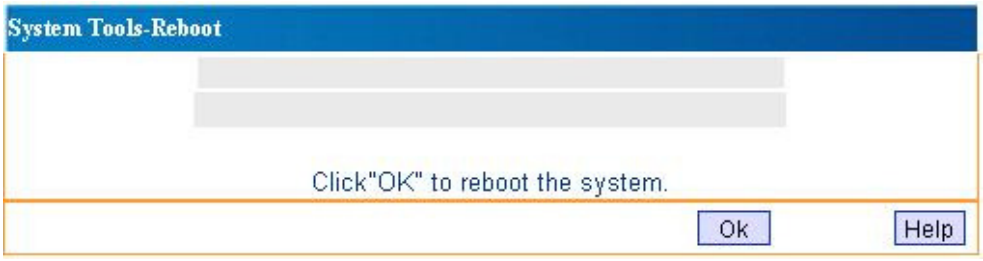
This page allows you to upgrade ZEW3002's firmware.
Click ***Browse*** to browse to the new firmware, and click ***Apply***.



Note: During the firmware upgrade, please make sure ZEW3002 is powered on. Otherwise, power failure will result in a fatal damage to ZEW3002. After the process is completed, ZEW3002 will reboot automatically. It will take about several minutes, please wait patiently.

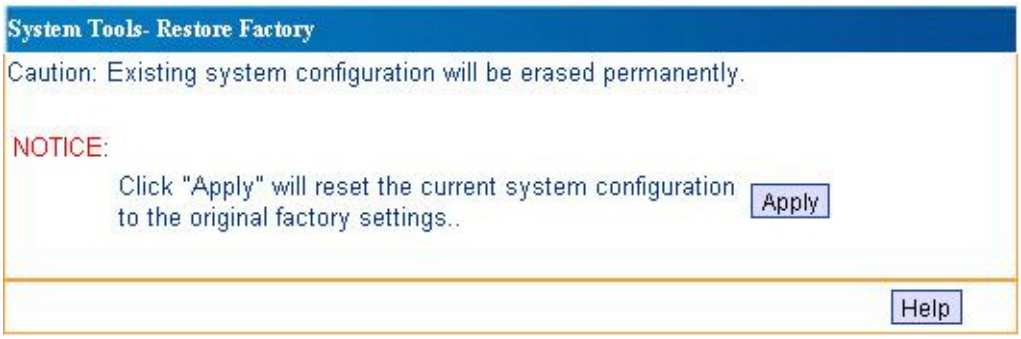
6.3 Reboot

Click ***OK*** to reboot your ZEW3002.



6.4 Restore Factory Default

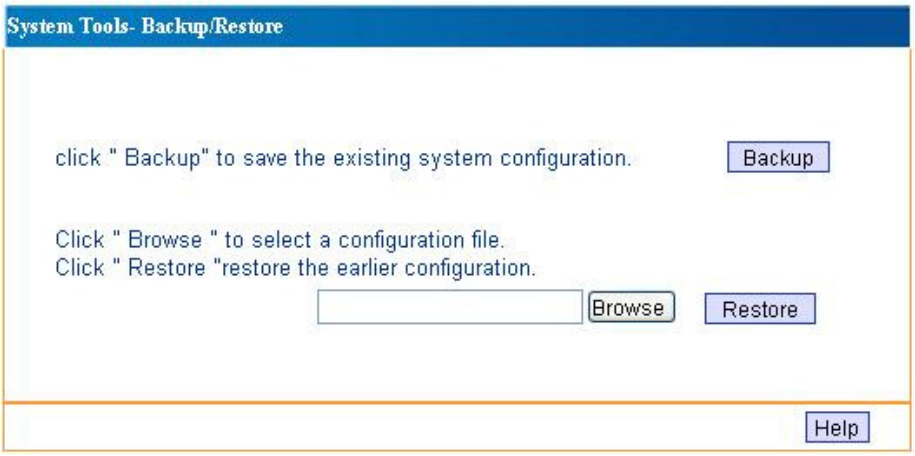
By clicking the ***Apply*** button you can restore the factory defaults back configuration to factory default.



ZEW3002's Default Values	
Working mode	AP mode
user name	admin
password	admin
IP address	192.168.0.254
subnet mask	255.255.255.0
Gateway	192.168.0.1

6.5 Restore/Backup Setting

Click ***Export*** button to save the current changes that you have made.
And click on the ***Import*** button to restore the previously saved settings.



6.6 Logout

Click the **Exit** button to log out the web-based utility.

6.7 Help

Click the **Help** button to get more information about ZEW3002's settings and applications.

Help	
Wizard	Following the Wizard, you can easily set the parameters of the AP,No need specialist in the networking devices, you can also return to the menu tab, to choose any functions that needs customization.
LAN Setting	Configure IP address of the 802.11g Wireless AP's LAN interface using an assigned static address or receive an IP address from a DHCP server. Please consult with your LAN administrator if uncertain..
Basic Setting	SSID is the wireless network name. SSID broadcast: Select "Enable" to make your wireless network visible by all clients. Select "Disable" to make it invisible . Radio mode, Speed , Channels,RF mode,Booster Mode, RTS value,Beacon Period, DTIM Period,please input according to the relative value range. then click on " Apply " Button after finished the configuration.
Mode Setting	Radio Mode (802.11g Wireless AP with 5 different modes) : 1、Access Point:802.11g Wireless AP behaves as a wireless switch that accept connection requests from PC workstations and laptops via wifi. 2、Point-to-Point: 802.11g Wireless AP behaves as a peer to another 802.11g Wireless AP to form a dedicated wireless trunk over the air. It will not accept connection requests from PC workstations and laptops via wifi. The remote peer's MAC address is required ¨C use the "Discovery On"for discovery. 3、Point-to-Multipoint: 802.11g Wireless AP is used to provide central switching of up to 5 other 802.11g Wireless AP. The remote MAC addresses are required ¨C click the "Discovery On" for discovery. 4、Repeater: 802.11g Wireless AP behaves as a signal repeater between two remote 802.11g Wireless APs. The remote MAC addresses are required ¨C click the "Discovery On" for discovery. 5、Client: 802.11g Wireless AP behaves as a wifi network card to the remote wifi access point. The remote MAC address is required ¨C click the "Discovery On" for discovery. SSID : Service Set ID. WDS remote AP mac List: manual input or by auto scan the MAC address into the table 802.11g Wireless AP supports the following encryption standards: 1、WEP Open system protocol. 2、WEP Shared key. 3、WPA PSK (AES/TKIP 8-63 ASCII characters or 64 HEX digits) 4、WPA2 PSK (AES 8-63 ASCII characters or 64 HEX digits) 5、WPA2 Mixed (AES 8-63 ASCII characters or 64 HEX digits) Key Type: ASCII or HEXI Key Size: User defined encryption string.
Access Filter	Access Control Filer is a security measure to allow/block registered MAC addresses-PC workstations or even other WLAN clients.. Filter Optional :Close, Allow, Block MAC table: add and delete MAC address by manual or scan. All settings will be effective by Apply.
Change password	Change the user name or password.
Firmware upgrade	Upgrade firmware. Entry "www.zonetusa.com" to download the latest firmware.
Reboot	Reboot the AP,all the changes will be applied,All connections will be broke during reboot.Click "OK" to reboot.
Restore Factory	Set to default settings: Default username: admin Default password: admin IP address:192.168.0.254 Subnet mask: 255.255.255.0
Restore/Backup	Click Export to save the current configuration files and make a backup file. Click on the "browse" to import the saved configuration file to apply and reboot to take effective.
Exit	Click "exit" and Yes to exit AP web-based Management interface.

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Chapter 7. Troubleshooting

● If you have trouble connecting to the Internet, try the following steps.

1. Power off the Cable/DSL modem, ZEW3002, and computer and wait for 5 minutes.
2. Turn on the Cable/DSL modem and wait for the lights on to settle down.
3. Turn on ZEW3002 and wait for the lights on to settle down.
4. Turn on the computer.
5. Reconfigure ZEW3002 as described in Chapter 4.
6. Login to ZEW3002 and select the System Status tab.
7. Verify the IP Address, Default Gateway, have valid numbers assigned to them.

● If my network's IP is different than the Access Point's range, what should I do?

You should still configure ZEW3002 first. After all the settings are applied, go to the ZEW3002’s configuration page, click on TCP/IP settings and change the IP address of ZEW3002 to match your network's IP.

Appendix I: Glossary

Access Point(AP): Any entity that has station functionality and provides access to the distribution services, via the wireless medium(WM) for associated stations.

Channel: An instance of medium use for the purpose of passing protocol data units (PDUs) that may be used simultaneously, in the same volume of space, with other instances of medium use(on other channels) by other instances of the same physical layer (PHY),with an acceptably low frame error ratio(FER) due to mutual interference.

SSID: Service Set identifier. An SSID is the network name shared by all devices in a wireless network. Your network's SSID should be unique to your network and identical for all devices within the network. It is case-sensitive and must not exceed 20 characters (use any of the characters on the keyboard).Make sure this setting is the same for all devices in your wireless network.

WEP: Wired Equivalent Privacy (WEP) is the method for secure wireless data transmission. WEP adds data encryption to every single packet transmitted in the wireless network. The 40bit and 64bit encryption are the same because of out 64 bits, 40 bits are private. Conversely, 104 and 128 bit are the same. WEP uses a common KEY to encode the data. Therefore, all devices on a wireless network must use the same key and same type of encryption. There are 2 methods for entering the KEY; one is to enter a 16-bit HEX digit. Using this method, users must enter a 10-digit number (for 64-bit) or 26-digit number (for 128-bit) in the KEY field. Users must select the same key number for all devices. The other method is to enter a text and let the computer generate the WEP key for you. However, since each product use different method for key generation, it might not work for different products. Therefore, it is NOT recommend using.

WPA/WPA2: A security protocol for wireless networks that builds on the basic foundations of WEP. It secures wireless data transmission by using a key similar to WEP, but the added strength of WPA is that the key changes dynamically. The changing key makes it much more difficult for a hacker to learn the key and gain access to the network.WPA2 is the second generation of WPA security and provides a stronger encryption mechanism through Advanced Encryption Standard (AES), which is a requirement for some government users.